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INACTIVATION OF VHSV BY PERCOLATION AND SALT UNDER EXPERIMENTAL CONDITIONS

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Abstract:

At the moment the only legal method in Denmark to sanitize wastewater from fish cutting plants is by percolation. To evaluate the inactivation effect of percolation on VHSV an experimental examination was initiated. A column packed with gravel as top- and bottom layer (total of 22 cm) and a mid layer consisting of dug sand (76 cm) was used for the trial. Over a period of 18 h 3.9 x 10^{10} $TCID_{50}$ VHSV was supplied to the column, where after normal tap water was supplied for the rest of the trial period, in total 7 days. During the 7 days samples for virological examination was taken. The sampling was most intensive in the period where the risk of VHSV breaking through the column was highest. The sensitivity of the virological examination was 13.9 $TCID_{50}$/ml and no virus was isolated. A reduction of VHSV > 4 log in the outlet water was seen. This experiment suggests that percolation can be a valuable method to sanitize VHSV infected water. Changes in temperature, pH, earth types in the area used for percolation etc. may change the virus reduction, though.

As some of the fish cutting plants are also smoking rainbow trout fillets, the question arose whether a brine solution will inactivate VHSV. In order to answer this question a small trial was set up. VHSV and NaCl was added to cell culture medium with 10% foetal bovine serum, in order to mimic a "dirty" environment, to obtain from 1.9% to 20.9% NaCl and kept in the dark at 4°C. Samples were titrated after 5 min, 1 h and 20 h. No reduction in titer was observed in any of the samples.